CHAPTER 2

DEFINITION AND DEVELOPMENT

2-1. **Definition.**

a.   There are many names used for network analysis management systems. These systems differ somewhat in their diagraming techniques, notations, terminology, and computer programs, but operate fundamentally in the same manner producing the same basic information common to all of them. The term Network Analysis Systems (NAS) is used by the Corps of Engineers to cover all such systems.

b.   The Corps of Engineers recognizes two NAS methods most commonly used by industry, "Precedence" diagraming where the activity is represented by a block and "Arrow diagraming" where the activity is represented by an arrow. These two scheduling systems employ significantly different diagraming techniques. The results of analyses from these systems produce similar report data, however, differences exist between them which must be recognized and understood. Precedence networks have become prevalent in the scheduling industry.

c.   Network Analysis Systems can produce a variety of information. The procedures recommended herein include only those considered to be most applicable to work administered by the Corps of Engineers in the field of program planning, engineering design, construction, and operation and maintenance.

d.   Where contracts require the use of Network Analysis Systems by the contractor, it is not intended that any specific Network Analysis System be designated as mandatory. Rather, it is intended that construction contractors be permitted to use procedures with which their management personnel are most familiar and can use most effectively, as long as those procedures provide the basic information required by the contract specifications. The procedures and techniques described herein are acceptable. Other programs exist which will provide the information specified in the contract. A Standard Data Exchange Format has been developed which allows transfer of basic data between participating programs.

e.   NAS is not a new method of planning. It is a method graphically portraying planning, which demands much greater detail than was necessary under past procedures such as bar charts. It displays the logic or order and interdependence of the various activities in such a manner that they can be analyzed, so as to produce much more meaningful data. The time and cost associated with each task are used in mathematical computations which project completion and payment due as progress is made on the project.

2-2. <u>Development.</u>

    a. Preparing the network diagram. Someone who thoroughly understands the project and knows how to accomplish the work or someone with access to those who have this information is the one best able to prepare the diagram, or at least have direct management of the preparation. If a consultant is used, his or her services should be limited to collecting and recording the basic information from appropriate managers and providing computer services for analysis and updating. Participation by responsible project managers or superintendent is vital. A common failing can occur if planning is left to an individual who is not directly involved in the project. If this is the case, management will not be committed to operate in accordance with the planning. Once the network plan is divorced from actual project accomplishment or becomes out of date with actual progress, it becomes useless.

    b. The Logic Diagram. Network Analysis Systems function primarily for time analysis. Consequently, the project to be accomplished must be broken down into activities or tasks that require time, whether or not they require effort or costs. Normally, the degree of detail into which the project schedule is divided is determined by the activities to which reasonable time estimates can be applied. Of course, the degree of detail is also influenced by the accuracy desired and the use to be made of the system. Usually greater detail results in greater accuracy, since better time estimates can be made for smaller pieces of work. Many factors must be considered in determining the degree of detail to be shown. Since the project manager must furnish the estimates and use the data from the system, he or she should be involved in this decision concerning the level of detail. State-of-the-art computers handle large amounts of data very rapidly so that more detail can be handled easily in analysis. However, activities must be reviewed and updated by managers.